

REMARKS

The foregoing Amendment and remarks which follow are responsive to the final Office Action mailed June 2, 2004 in relation to the above-identified patent application. In that Office Action, the Examiner rejected Claims 1-10 under 35 U.S.C. Section 103(a) as being unpatentable over the combination of the Brownlee, Olvey, and Peer, Jr. references. In response to the Amendment and accompanying Harrison Declaration filed by Applicant on December 15, 2003, the Examiner indicated that the Harrison Declaration appears to indicate the solution to the problem of the prior art is to have the metal side of the metalized polyester adjacent the paper and to corona treat the polyester so it forms a better bond (per Paragraph 19 of the Harrison Declaration). However, the Examiner also pointed out that bonding the corona treated surface would require the corona treated side to face the paper as this is the only surface it can be bonded to, therefore causing one side of the polyester to be both corona treated and metalized. The Examiner noted that the claims and the specification of the present application require the metallization to be on the opposite side of the polyester from the corona treatment.

By this Amendment, Applicant has amended independent Claims 1 and 6 of the present application only to clarify that the chemical or corona treatment does not need to be applied to the side opposite to the metalized side of the film. Claims 1 and 6 have also been amended to clarify that the metalized side of the film is applied to the paper backing in order to avoid it being scuffed during the corrugation process.

In addition to amending independent Claims 1 and 6, by this Amendment, Applicant has added new Claims 11 and 12 into prosecution. More particularly, Claims 11 and 12 specify that the metalized surface of the film is the one that is treated, which is in accordance with the improved result referred to in Paragraph 19 of the Harrison Declaration.

Applicant respectfully submits that independent Claims 1 and 6 as amended are enabled by the specification of the present application. While it was originally emphasized in the specification that the treatment was applied to the opposite side to that which is metalized, it is noted that the polyester film referred to as to XP-131 in the specification is chemically treated on only one side. As mentioned in the specification, MP-531 is a film produced by Saehan Industries of Korea by metalizing one side of the XP-131 polyester film,

no mention being made in the specification of which side is metalized. Thus, as indicated above, Applicant respectfully submits that the specification enables the amended wording of Claims 1 and 6.

As indicated above, in the Office Action, the Examiner states that there is a discrepancy between the pending claims of the present application and the Harrison Declaration. The Harrison Declaration, at Paragraph 19, states that:

“The above problems were overcome when we tried a metallised polyester whose metallised surface was adjacent the paper backing of the laminate. Further, the side adjacent the paper backing was also corona treated and glued to the paper backing.”

Applicant respectfully submits that this statement is not inconsistent with Claims 1 and 6 as amended. In fact, there is no requirement that the treatment must be on the side which is not metalized, so long as the polyester sheet has been treated on at least one side. While the problems of delamination mentioned in Paragraph 18 of the Harrison Declaration were overcome by corona treating the metalized side of the polyester film (because of the added benefit of improving adhesion between the pre-laminate and the corrugated backing as discussed in the Olvey reference), the real breakthrough was in discovering that the corona/chemical treatment was actually increasing the film's melting point and ability to dissipate heat so that the corrugator could be run at close to its nominal temperature and throughput. It should be noted that corrugators constitute a very complicated operating system in which seemingly insignificant changes in temperature or speed (or input material) at one point in the process often have significant (and often unforeseen) ramifications for another part of the process and/or the finished product itself.

In order to economically produce the corrugated laminar according to the present invention, the Applicant realized that an in-line process would be required wherein the laminar was applied to the corrugated core as it was corrugated. However, corrugators operate at elevated temperatures which would ordinarily simply melt the plastic film. The Applicant chose polyester film which has a melting temperature of around 145° C with a corrugator which normally operates at around 175° C. As noted by the Examiner, the Olvey reference discloses that corona or chemical treatment of a polyester film will increase its surface area thereby providing a larger area for subsequent adhesion to a further surface.

However, Applicant discovered that a side-effect is that the film's response to heat is also altered.

A first heat response change is that the melting point of the film is increased by corona or chemical treatment. Accordingly, corona or chemical treatment raises the melting point of polyester film from around 145° C to around 175° C. By also slightly reducing the operating temperature of the corrugator to around 165° C, the Applicant was then able to successfully continuously produce a corrugated metalized polyester laminate in a corrugator operating at an elevated temperature. A further change brought on by corona or chemically treating a metalized film is that the film's ability to dissipate heat is improved so that it does not remain at an elevated temperature for an excessive period of time which had previously caused problems with the adhesion between pre-laminate and corrugated paper backing (referred to as the "heat magnification" problem in the specification).

With particular regard to the prior art, the Brownlee reference discloses a system of laminating cut sheets of corrugated material (i.e., "sheet laminating"), and theorizes that it would be possible to instigate a single in-line process in which a metalized plastic film is laminated to a paper backing, with this lamination then being combined with a central layer of corrugated cardboard. However, Applicant respectfully submits that this language of the Brownlee reference is unsubstantiated, in that any attempt to instigate such theoretical in-line process would have immediately given rise to the heat magnification problems which Applicant encountered, and resulted in the de-lamination of the product. Furthermore, though the Brownlee reference discloses utilizing polyester as the polyester film, it does not provide any solution to the problem of avoiding having the polyester film melt in a standard corrugator because of its relatively low melting point.

In the Peer, Jr. reference, a pre-laminate including a plastic film is applied to a corrugated medium as it is being corrugated in order to produce a decorative product. The Peer, Jr. reference also mentions metalizing the plastic film. However, the Peer, Jr. reference does not specifically disclose polyester as the plastic polymer film. The plastic film in the Peer, Jr. reference has the primary function of imparting additional tear strength to the end product whereas in the present invention, the Applicant has discovered that polyester is the preferred polymer for use in manufacturing a continuous corrugated laminar.

It is also noted that the Peer, Jr. reference does not disclose completely metalizing a surface of the polymer film. In this regard, the Peer, Jr. reference states that “a metalized layer 132 may be affixed on portions of the back of transparent plastic film 114.” The reason for this is presumably to allow decorative patterns to be made on the plastic film using metallization techniques. In contrast, a metalized layer is applied to the entire surface of one side of a polyester film in accordance with the present invention in order to provide the finished corrugated laminar with an elevated thermal resistance so that it can be used in manufacturing a cool store box. Because the Peer, Jr. reference does not teach metalizing the entire surface of the film, the heat retention and magnification problem will not occur to the same extent as in the present invention.

In the Office Action, the Examiner has stated that the (theoretical) process referred to in the Brownlee reference could be carried out on the corrugating machine disclosed in the Peer, Jr. reference, with the introduction of the corona or chemical treatment suggested by the Olvey reference to arrive at the present invention as claimed. However, Applicant respectfully submits that had the Peer, Jr. reference apparatus been used to attempt to manufacture laminated metalized polyester product in accordance with the system suggested in the Brownlee reference, the first problem which would be encountered is that the polyester film would melt in the corrugator. Though this problem could be overcome by significantly reducing the temperature of the corrugator, this measure would also substantially weaken the bond strength between pre-laminate and corrugated paper backing. Furthermore, the heat magnification problem would also occur due to the introduction of a metalized layer within the corrugator. In order to overcome these problems which are related to the polyester film's inability to handle excessive heat, Applicant respectfully submits that it would not occur to a person skilled in the art to look to the Olvey reference for a solution. Thus, Applicant respectfully submits that it is only with a disfavored hindsight consideration of the teachings of the Peer, Jr., Brownlee and Olvey references that one would arrive at the present invention.

On the basis of the foregoing, Applicant respectfully submits that the stated grounds of rejection have been overcome, and that Claims 1-12 are in condition for allowance. Additionally, Applicant respectfully submits that the present Amendment does not introduce new issues which would require further searching on the part of the Examiner, and therefore

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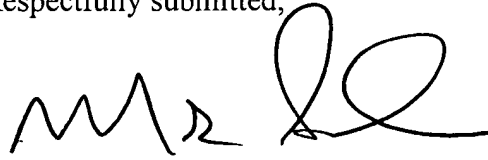
respectfully requests that the same be considered and entered by the Examiner. An early Notice of Allowance is therefore respectfully requested.

If any additional fee is required, please charge Deposit Account Number 19-4330.

Respectfully submitted,

Date: 8/11/04

By:



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